Product Information

KM 100

Miniature Microphone System

www.neumann.com

Georg Neumann GmbH, Berlin • Ollenhauerstr. 98 • 13403 Berlin • Germany • Tel.: +49 (30) 417724-0 • Fax: +49 (30) 417724-50
E-Mail: headoffice@neumann.com, engineering@neumann.com, catalog-info@neumann.com • Web: www.neumann.com

The variable condenser miniature microphone system consists of several active microphone capsules with different directional characteristics, an output stage, and numerous accessories.

Currently there are seven active capsules available: omni diffuse-field equalized, omni free-field equalized, cardioid, wide-angle cardioid, cardioid with bass roll-off, hypercardioid, and figure-8.

Through the modular construction of mic capsules and the output stage it is very easy to adapt the system to a wide range of applications. The mic becomes nearly invisible during work with cameras (film, video), on stage, or suspended from the ceiling in a concert hall.

An active capsule can also be screwed directly onto the output stage. The result is a compact miniature microphone.

Construction

The microphones are only 92 or 110 mm resp. long and 22 mm in diameter. They consist of the condenser capsule and the output stage. Both parts can be unscrewed from each other. The system offers several condenser capsules with different directional characteristics.

Numerous accessories can be mounted between the capsules and the output stage. The capsules attach to cables, capsule extensions, swivel mounts, table stands, goosenecks, stereo mounts, and hangers. Therefore, it is very easy to adapt the system to a wide range of applications.

The active capsule itself is only 35 or 47 mm resp. long. The KM 100 output stage and the active microphone capsule may be separated by up to 50 m of interconnecting cable. These cables are 3 mm in diameter, and therefore very inconspicuous.

Features

- *Miniature microphones with 7 exchangeable capsules*
- *Active capsules, detachable up to 50 m from the output stage*
- *Great variability through capsule extensions and goosenecks*
- *Switchable 10 dB pre-attenuation*
- *Set includes windshield and two different clamps*
- *Transformerless circuitry*
- *Extensive accessories*

Acoustic features

AK 20 is a pressure gradient transducer with the figure-8 characteristic, realized with a single diaphragm. The diaphragm diameter is just 16 mm. All sound field components reach the diaphragm directly. This results in identical frequency response curves and output levels at 0° and 180° sound incidence. Corresponding accessories allow combining the AK 20 with other active capsules or microphones to obtain an MS-Stereo setup.

AK 30 is a diffuse-field equalized pressure transducer with a flat frequency response up to 10 kHz (in the diffuse field). In the free sound field this microphone has a boost of approximately 7 dB at 10 kHz.

AK 31 is a free-field equalized pressure transducer with a flat frequency response up to 20 kHz (in the free field). In the diffuse sound field this microphone has a high frequency roll-off above 5 kHz.

AK 40 is a pressure gradient transducer with cardioid characteristic. The frequency curves are very smooth and match 0° sound incidence. Sound from sources within a pickup angle of ± 135° is reproduced without any coloration.

AK 43 is a pressure gradient transducer with wide-angle cardioid characteristic. Attenuation at 90° is 4 dB, at 135° it is 8 dB and at 180° it is 11 dB. The frequency response curves for sound sources within an angle of ± 90° are parallel up to 12 kHz.

AK 45 is a pressure gradient transducer with cardioid characteristic, similar to the AK 40. However, it has an acoustic bass roll-off that is useful during applications when subsonic and low frequencies may cause difficulties. The AK 45 is optimized for a flat low frequency response at a recording distance of 15 cm ("speech cardioid").

AK 50 is a pressure gradient transducer with hypercardioid characteristic. Attenuation of sound incidence from the side or rear is about 10 dB, with minimum sensitivity at an angle of 120°.

Electrical features

The KM 100 is phantom powered (48 V) and uses transformerless output circuitry. This has several advantages. It features high output capability and extremely low self noise. It provides exceptionally clean sound, free of any coloration. As with traditional transformers, this circuit approach ensures good common mode rejection. The balanced output signal is protected against interference.

The construction is extremely compact. The entire microphone circuitry is on a single hybrid module measuring only 2 cm² in area. It is built into the microphone capsule, therefore the term “active capsules”.

All sensitive components are protected within the capsule. As a result, the quality of the audio signal is never compromised through the use of accessories, for example, when the capsule is detached from the output stage and mounted on a cable or a gooseneck.

Even with a long cable between active capsule and output stage, the signal is immune to external interference.

Preattenuation

The output stage has a 10 dB switch. Attenuation is achieved by reducing the capsule voltage to one third.

When the switch is on, the microphone is capable of accepting sound pressure levels up to 150 dB without being overloaded.

Connectors

To diminish the number of connectors within the KM 100 System some accessories were modified. They can now be screwed directly onto the KM 100 output stage without using the KA 100 cable adapter. The new accessories which include the cable adapter, were renamed adding the suffix KA. For example: LC 3 is now LC 3 KA.

The separate KA 100 cable, needed for older accessories, will be available also in future.

The KM 100 output stage has a 3-pin XLR connector.

Sound diffraction sphere

The SBK 130 sound diffraction sphere slips onto the front of the KM 130/KM 131 pressure microphones. The diaphragm becomes an integral part of the surface of the sphere. This affects the frequency response of the microphones.

While sounds coming from the front-half space are emphasized by up to 2.5 dB between 2 kHz and 10 kHz, sounds arriving from the rear-half space are attenuated by a maximum of 2.5 dB in the range above 5 kHz.

Since the sound diffraction sphere causes the pressure buildup of the KM 130/KM 131 pressure microphones to begin earlier, the frequency response rises smoothly in the middle and upper range. This is similar to a typical pressure gradient microphone, where the directivity increases with rising frequencies. However, since the KM 130/KM 131 are pressure microphones, they maintain a linear sensitivity down to the lowest frequencies.

This changing directivity allows to record at a greater distance from the sound source, and makes the KM 130/KM 131 microphones especially suited as stereo main microphones in A-B configurations.

KM 100 F Output stage

The KM 100 F output stage is an alternative to the KM 100 output stage. In contrast to the KM 100 output stage with a flat frequency response, the KM 100 F attenuates frequencies below 80 Hz at 6 dB/octave. This eliminates or suppresses interference caused by wind or structure-borne noise.

A built-in slide switch allows to raise the cut-off frequency (-3 dB point) from 80 Hz to 120 Hz. An additional slide switch lowers the sensitivity by 10 dB.

Stereo recordings

By means of the AC 30 adapter cable two active capsules, AK 20 and e.g. AK 40 can be connected as MS stereo pair directly with the MTX 191 (A) matrix amplifier. The XY or MS signal is then available at the 5-pin XLR output connector of the MTX 191 (A), and the recording angle can be electrically remote controlled. The output stages KM 100 are then not required.

Stereo set

The cardioid and hypercardioid microphones are also available as complete stereo sets, SKM 140 and SKM 150, including all accessories in a single jeweler's box.

A further SKM 100-MS Stereo Set containing the microphones KM 120 and KM 140 is available.

Current:

KM 100 Output stage *KA 100 Cable adapter*

LC 3 Microphone cable

New:

KM 100 Output stage

LC 3 KA Microphone cable

*Accessories**

AK 20, Active capsule
Catalog No.: 71659

AK 30, Active capsule
Catalog No.: 69001

AK 31, Active capsule
Catalog No.: 69002

AK 40, Active capsule
Catalog No.: 69007

AK 43, Active capsule
Catalog No.: 69014

AK 45, Active capsule
Catalog No.: 69015

AK 50, Active capsule
Catalog No.: 69016

KA 100, Cable adapter
Catalog No.: 07330

KM 100, Output stage
Catalog No.: 07395

KM 100 F, Output stage
Catalog No.: 07376

SBK 130, Sound diffraction sphere
for dia. 22 mm,
Catalog No.: 07371

BS 48 i, Battery supply
Catalog No.: 06494

BS 48 i-2, Battery supply
Catalog No.: 06496

N 248, Power supply
EU: Catalog No.: 08537
US: Catalog No.: 08538
UK: Catalog No.: 08539

IC 3 mt, Microphone cable
Catalog No.: 06543

Extension cable
LC 2, 10 m, Catalog No.: 06690

Microphone cable
LC 3 KA, 5 m, Catalog No.: 08408
LC 3 KA, 10 m, Catalog No.: 08409

DS 21 mt, Double mount
Catalog No.: 06798

DS 100-1, Double swivel mount
(for KVF ... extension tubes)
Catalog No.: 08491

DS 120, Double mount
Catalog No.: 07343

**) Detailed descriptions of all accessories are contained in the accessories catalog.*

AK .. Active capsule

AK .. Active capsule

EA 2124 A mt,
Elastic suspension
Catalog No.: 08433

KVF 118 KA, Capsule extension
(with gooseneck, 300 mm)
Catalog No.: 08410

KVF 158 KA, Capsule extension
(with gooseneck, 700 mm)
Catalog No.: 08411

KVFF 148 KA, Capsule extension
(with double gooseneck, 700 mm)
Catalog No.: 08412

MA, Microphone fishpole
Catalog No.: 06771

MF 2, Table stand
(with rubber mounted thread)
Catalog No.: 07266

MF 3, Table stand
Catalog No.: 07321

MF 4, Table stand
Catalog No.: 07337

MF 5, Table stand
Catalog No.: 08489

MF-AK Table Stand
(with Swivel Joint)
Catalog No.: 08453

MNV 21 mt
Auditorium hanger
with clamp for KM ...
Catalog No.: 06802

MNV 87 mt, Auditorium hanger
(with threaded adapter)
Catalog No.: 06806

MNV 100, Auditorium hanger
(with clamp for AK ...)
Catalog No.: 06811

SG 21/17 mt Swivel mount
(with 21 mm and 17 mm clamp)
Catalog No.: 06149

SG 100, Swivel mount (for KVF ...)
Catalog No.: 06688

SG 100-1, Swivel mount
Catalog No.: 08490

SG-AK Swivel Mount
Catalog No.: 08452

SGE 100, Swivel mount for MF 2
(with rubber mounted thread
for AK ...)
Catalog No.: 06742

SMK 8 i, Gooseneck
Catalog No.: 06181

*) Detailed descriptions of all accessories are contained in the accessories catalog..

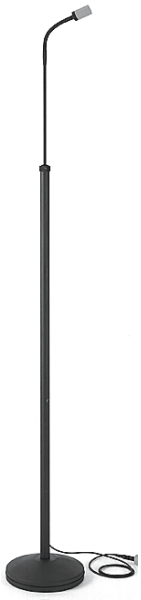
Accessories

SMK 100 KA, Gooseneck
(with cable, 160 mm)
Catalog No.:08413

SMK 100-2 KA, Double gooseneck
(with cable, 160 mm)
Catalog No..: 08414

PS 15, Pop screen
Catalog No.: 08472

STH 100, Stereo mount
(for 2xAK ... with LC 3)
Catalog No.: 07315



SR 100, Stand tube
Catalog No.: 07336 and
KA 100, Catalog No.: 07330

Stand extension
STV 4, Catalog No.: 06190
STV 20 , Catalog No.: 06187
STV 40, Catalog No.: 06188
STV 60, Catalog No.: 06189

TF 221 c, Table flange
(with rubber mounted thread)
Catalog No.: 07278

Windscreen, 45 mm
WNS 100 blk., Cat. No.: 07323
WNS 100 red, Cat. No.: 07324
WNS 100 grn, Cat. No.: 07325
WNS 100, yel, Cat. No.: 07326
WNS 100, blu, Cat. No.: 07327

WS 100, Windscreen, 90 mm
Catalog No.: 06751

Special Accessories for AK 20 and Stereo-Applications

DA-AK, Elastic suspension
for two AK ...
Catalog No.: 08419

DA-KM, Elastic suspension
for two KM ...
Catalog No.: 08420

WKD-AK, Windscreen
for DA-AK
Catalog No.: 08423

WKD-KM, Windscreen
for DA-KM
Catalog No.: 08424

STH 120, Stereo mount
for AK 20 and e.g. AK 40
Catalog No.: 08422

WJ-AK, Windjammer
for WKD-AK
Catalog No.: 08425

WJ-KM, Windjammer
for WKD-KM
Catalog No.: 08426

WNS 120, Windscreen
for AK 20
Catalog No.: 08427

AC 30, Adapter cable for connection of 2 AK ... with MTX 191 (A),
Catalog No.: 08418

MTX 191 A,
Matrix amplifier
Catalog No.: 07331

Application Hints

For recording situations where the microphone must remain "invisible".

KM 120

- *MS-Stereo microphone (in combination with the KM 140)*
- *Two crossed AK 20s in Blumlein technique*
- *Inconspicuous spot microphone with optimum attenuation of lateral sound sources*
- *Single microphone for two speakers facing each other*

KM 130

- *Ideal as AB stereo pair in the diffuse sound field because of the flat frequency response*
- *As a main mic, especially for capturing room acoustics*
- *For stereo recordings with a baffle plate*
- *As a spot mic for piano, wind instruments, organ, and choir*

KM 131

- *For close miking of instruments when there is no need to attenuate extraneous noise, and in a balanced acoustic environment to record acoustic guitar, wind instruments, strings, percussion, and drums*
- *Flat frequency response for close miking, spot mic*

KM 140

- *Universal usage, especially in situations when it is necessary to attenuate sound coming from adjacent instruments*
- *As XY and ORTF stereo pair*
- *Announcer's mic for broadcasting*
- *Spot mic, overhead*
- *Close miking of strings, wind instruments, percussion, piano, Leslie speakers, guitar amps*
- *We recommend using an additional windscreen to minimize the effects of high wind velocity*

KM 143

- *Polar response characteristic acts more like an omni. Therefore, it is an ideal tool to record larger instrument ensembles*
- *As AB stereo pair, especially in rooms with less than ideal acoustics*
- *As spot mic for strings, wind instruments, percussion, and Leslie speakers*
- *Acts very neutral when used close up to bass instruments, such as double bass, bass amps, guitar amps*

KM 145

- *It naturally compensates for proximity effect*
- *Very neutral tonal balance during close miking of speech, as in TV, movie and video , PA*
- *Acts very neutral when used close up to bass instruments, such as double bass, bass amps, guitar amps, Leslie speakers, toms*

KM 150

- *As XY stereo pair*
- *Overhead, toms*
- *In situations that are susceptible to acoustic feedback*
- *To attenuate unwanted sound of nearby instruments*
- *Recording of speech, as in TV, movie and video productions, PA systems*
- *Produces especially warm and bass supporting sound for artists who perform in proximity effect range*
- *We recommend using an additional wind-screen to minimize the effects of high wind velocity, and plosive sounds*

These are just some of the most common applications. Detailed hints are described in the catalog "KM 100 Application Guide".

Delivery Range KM ...

Microphone KM 120 ... KM 150
Windscreen WNS 100 or WNS 120
Stand mount swivel SG 21/17
Wooden box

Delivery Range SKM 140 (150)

2x Microphones KM 140 (150)
2x Connecting cables LC 3 KA
1x Stereo mount STH 100
Wooden box

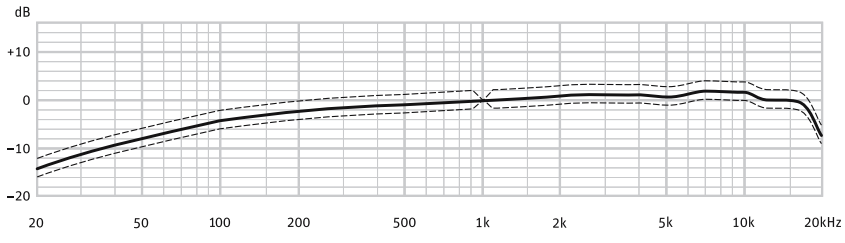
Delivery Range SKM 100-MS

1x Microphone each KM 120 and KM 140
2x Connecting cables LC 3 KA
1x Stereo mount STH 120, Wooden box

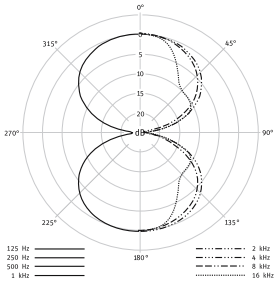
Catalog No.

KM 120	blk	008417
KM 130	blk	007051
KM 131	blk	007061
KM 140	blk	007031
KM 143	blk	007109
KM 145	blk	007068
KM 150	blk	007077
SKM 140	blk	007094
SKM 150	blk	007099
SKM 100-MS	blk	008421

KM 120



measured in free-field conditions (IEC 60268-4), tolerance ±2 dB



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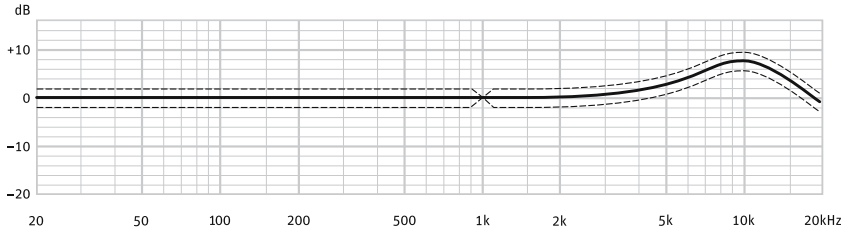

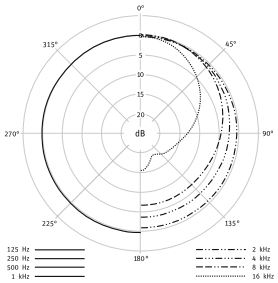

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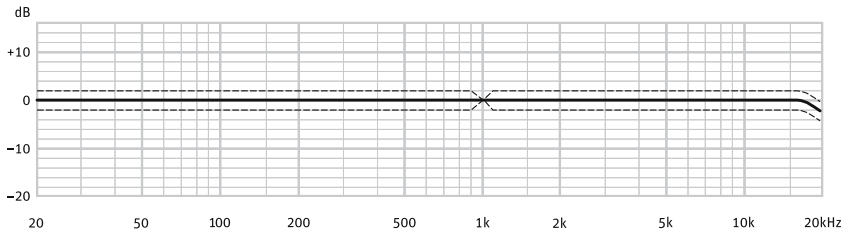
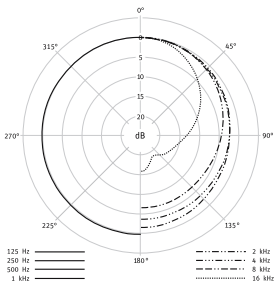
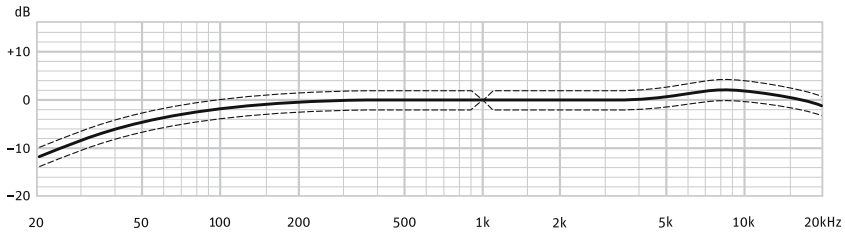
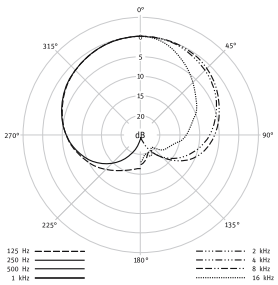




KM 140





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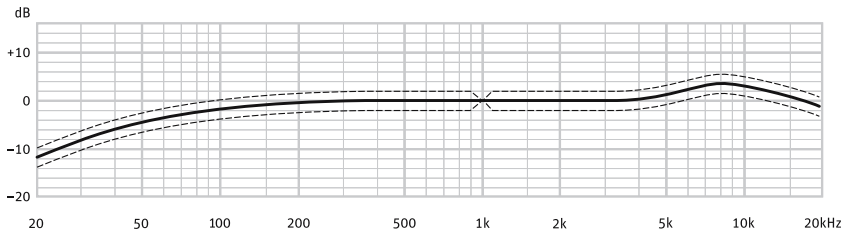

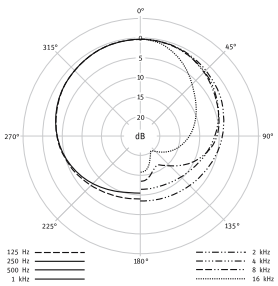

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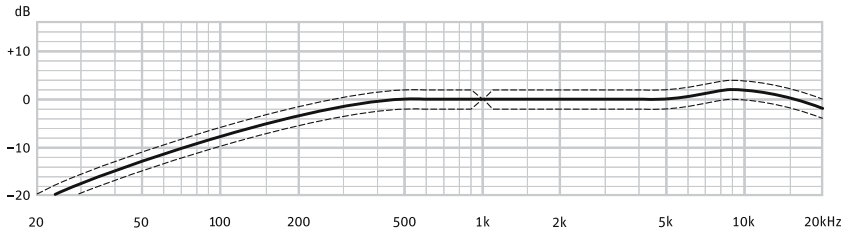

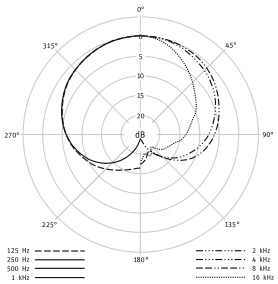

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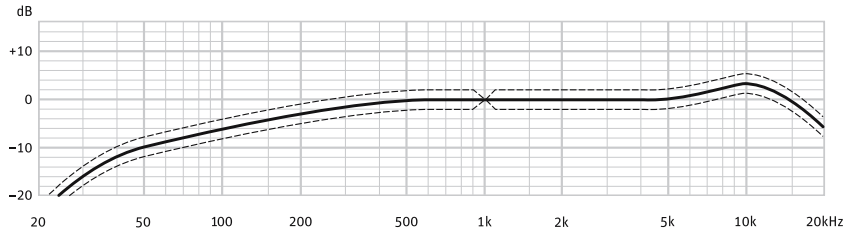
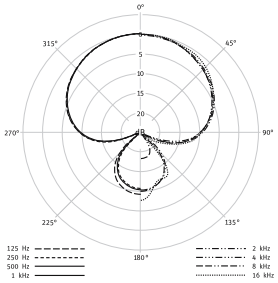
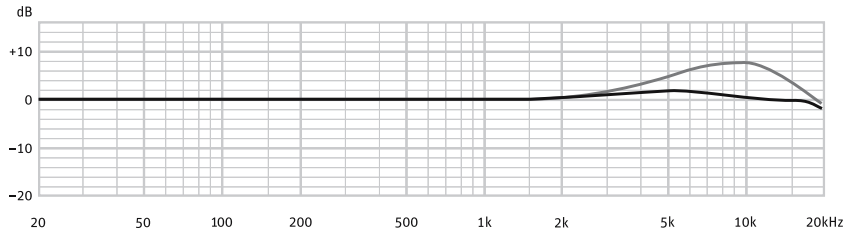
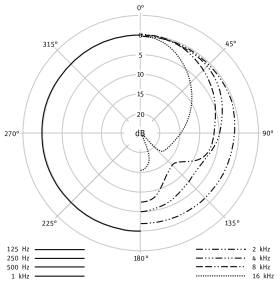




KM 130 with SBK 130

KM 131 with SBK 130





Technical Data	KM 120	KM 130	KM 131	KM 140	KM 143	KM 145	KM 150
Acoustical operating principle	Press. grad. transducer	Pressure transducer	Pressure transducer	Press. grad. transducer	Press. grad. transducer	Press. grad. transducer	Press. grad. transducer
Directional pattern	Side-fire figure-8	Omni diffuse field equalized	Omni free field equalized	Cardioid	Cardioid wide angle	Cardioid low frequency roll-off	Hyper-cardioid
Frequency range	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz	20 Hz to 20 kHz
Sensitivity at 1 kHz into 1 kohm	12 mV/Pa	12 mV/Pa	12 mV/Pa	15 mV/Pa	15 mV/Pa	14 mV/Pa	10 mV/Pa
Rated impedance	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms	50 ohms
Rated load impedance	1000 ohms	1000 ohms	1000 ohms	1000 ohms	1000 ohms	1000 ohms	1000 ohms
Signal-to-noise ratio							
CCIR[1] (rel. 94 dB SPL)	68 dB	67 dB	69 dB	69 dB	69 dB	68 dB	67 dB
A-weighted[1] (rel. 94 dB SPL)	76.5 dB	78 dB	78 dB	78 dB	78 dB	77 dB	76 dB
Equivalent noise level, CCIR[1]	26 dB	27 dB	25 dB	25 dB	25 dB	26 dB	27 dB
Equivalent noise level, A-weighted[1]	17.5 dB-A	16 dB-A	16 dB-A	16 dB-A	16 dB-A	17 dB-A	18 dB-A
Maximum SPL							
for THD 0.5%[2]	140 dB	140 dB	140 dB	138 dB	138 dB	138 dB	142 dB
for THD 0.5% with preatt[2]	150 dB	150 dB	150 dB	148 dB	148 dB	148 dB	152 dB
Maximum output voltage	10 dBu	10 dBu	10 dBu	10 dBu	10 dBu	10 dBu	10 dBu
Dynamic range of the mic amp (A-weighted)	122.5 dB	124 dB	124 dB	122 dB	122 dB	121 dB	124 dB
Supply voltage (P48, IEC 61938)	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V	48 V ± 4 V
Current consumption (P48, IEC 61938)	2 mA	2 mA	2 mA	2 mA	2 mA	2 mA	2 mA
Matching connector	XLR3F	XLR3F	XLR3F	XLR3F	XLR3F	XLR3F	XLR3F
Weight	102 g	80 g	80 g	80 g	80 g	80 g	80 g
Diameter	24/22 mm	22 mm	22 mm	22 mm	22 mm	22 mm	22 mm
Length	110 mm	92 mm	92 mm	92 mm	92 mm	92 mm	92 mm

[1] according to IEC 60268-1; CCIR-weighting acccording to CCIR 468-3, quasi peak; A-weighting according to IEC 61672-1, RMS [2] measured as equivalent el. input signal

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